PATENT COOPERATION TREATY

TRANSLATION

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

	Date of mailing *(day/month/year)*
Applicant's or agent's file reference JSONY-662PCT	FOR FURTHER ACTION See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/JP2005/001867	02.02.2005	18.03.2004

International Patent Classification (IPC) or both national classification and IPC

Applicant
SONY CORPORATION

1. This opinion contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☒	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP Facsimile No.	Authorized officer Telephone No.

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/JP2005/001867

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☐ in computer readable form

c. time of filing/furnishing

☐ contained in the international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/JP2005/001867

Box No. IV **Lack of unity of invention**

1. ☐ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has:

   ☐ paid additional fees

   ☐ paid additional fees under protest

   ☒ not paid additional fees

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

   ☐ complied with

   ☒ not complied with for the following reasons:

The technical feature common to all subject matters of claims 1-25 is controlling the frequency of the vibrating body to cause the gas to be discharged as a pulsating flow by the vibrations of the vibrating body in such a manner that the sound waves produced when gas is discharged, cancel each other out.

However, in this technical feature, the technique of causing the gas to be discharged as a pulsating flow by the vibrations of the vibrating body in such a manner that the sound waves produced when gas is discharged cancel each other out, is disclosed in JP, 55-101800, A (Pioneer Corp.), 04, August, 1980 (04.08.80), full text, Figs. 1-4, and the technique of controlling the frequency of the vibrating body is obvious.

Therefore, the technical feature common to all subject matters of claims 1-25 does not appear to disclose a contribution to prior art technique. So, this technical feature is not deemed to be a "special technical feature" described in the second sentence of PCT rule 13.2.

Therefore, the subject matters of "claims 1-2, 7-10 and 13-14", "claims 1 and 3-6", "claims 1 and 11-12", "claims 1, 15-17 and 19", "claims 1, 18 and 20", "claims 1 and 21-23", "claim 24" and "claim 25" do not satisfy the requirement of unity of invention.

4. Consequently, this opinion has been established in respect of the following parts of the international application:

   ☐ all parts

   ☒ the parts relating to claims Nos. 1-2, 7-10, 13-14

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/JP2005/001867

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	2, 7-10, 13-14	YES
	Claims	1	NO
Inventive step (IS)	Claims	7-10, 13-14	YES
	Claims	1-2	NO
Industrial applicability (IA)	Claims	1-2, 7-10, 13-14	YES
	Claims		NO

2. Citations and explanations:

Document 1: JP, 55-101800, A (Pioneer Electronic Corp.), 04 August, 1980 (04.08.80)

Document 2: JP, 10-47254, A (Yugen Kaisha Guppi), 17 February, 1998 (17.02.98)

Document 3: JP, 2001-355574, A (Matsushita Electric Industrial Co., Ltd.), 26 December, 2001 (26.12.01)

Document 4: CD-ROM of the specification and drawings annexed to the written application of Japanese Utility Model Application No. 48851/1992 (Laid-open No. 22582/1994) (Nakasa Co., Ltd.), 25 March, 1994 (25.03.94)

The subject matter of claim 1 does not appear to be novel or to involve an inventive step since this subject matter is disclosed in document 1 or 2 cited in the ISR.

Document 1 discloses a gas discharge device comprising a vibrating body (14) and discharge parts (11a, 12a) for discharging a gas as a pulsating flow by the vibrations of the vibrating body in such a manner that the sound waves produced when gas is discharged, cancel each other out.

Although document 1 does not specifically describe a control means for controlling the frequency of the vibrating body, there is the description "driving of the driver unit is always performed at ± 30% of the resonance frequency" in document 1 (page 2, upper-left column line 20 to upper-right column, line 1). Therefore, it is recognized that an indication of controlling the frequency of the vibrating body is described in document 1. Further, a technique of controlling the frequency of a vibrating body is obvious to a person skilled in the art.

Document 2 discloses a gas discharge device comprising vibrating bodies (16, 16) and discharge parts (15b, 15b) for discharging a gas as a pulsating flow by the vibrations of the vibrating body in such a manner that the sound waves produced when gas is discharged, cancel each other out. Although document 2 does not specifically describe a control means for controlling the frequency of the vibrating body, a technique of controlling the frequency of a vibrating body is obvious to a person skilled in the art.

The subject matter of claim 2 does not appear to involve an inventive step in view of documents 1-3 cited in the ISR.

It is well-known technique to control the amplitude of a vibrating body for discharging a gas as described in document 3 (paragraphs [0031]-[0032]). Therefore, a person skilled in the art could

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

have easily conceived of controlling the amplitude of the vibrating body of the gas discharge device described in documents 1 and 2.

The subject matters of claims 7 and 8 appear to be novel and to involve an inventive step because these matters are not described in any of the documents cited in the ISR. Particularly, a technique in which the frequency of the vibrating body is controlled below 100 Hz and the amplitude of the vibrating body is controlled between 1 and 3 mm if the area of the vibrating body is less than 70,000 mm^2 is not described or indicated in any of the documents.

The subject matters of claims 9 and 10 appear to be novel and to involve an inventive step because these matters are not described in any of the documents cited in the ISR. Especially, a technique in which the frequency of the vibrating body is controlled below 35 Hz and the amplitude of the vibrating body is controlled between 1 and 5 mm if the area of the vibrating body is less than 70,000 mm^2 is not described or indicated in any of the documents.

The subject matters of claims 13 and 14 appear to be novel and to involve an inventive step because these matters are not described in any of the documents cited in the ISR. Especially, a technique in which $A \times B \times C$ is between 100,000 and 10,000,000 mm^3/s wherein A is the frequency of the vibrating body (Hz), B is the amplitude of the vibrating body (mm) and C is the area of the vibrating body (mm^2) is not described or indicated in any of the documents.

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Applicant
SONY CORPORATION

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If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

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International application No.
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2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material

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      ☐ contained in the international application as filed.

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3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/JP2005/001867

Box No. IV Lack of unity of invention

1. ☐ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has:

   ☐ paid additional fees

   ☐ paid additional fees under protest

   ☒ not paid additional fees

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

   ☐ complied with

   ☒ not complied with for the following reasons:

The technical feature common to all subject matters of claims 1-25 is controlling the frequency of the vibrating body to cause the gas to be discharged as a pulsating flow by the vibrations of the vibrating body in such a manner that the sound waves produced when gas is discharged, cancel each other out.

However, in this technical feature, the technique of causing the gas to be discharged as a pulsating flow by the vibrations of the vibrating body in such a manner that the sound waves produced when gas is discharged cancel each other out, is disclosed in JP, 55-101800, A (Pioneer Corp.), 04, August, 1980 (04.08.80), full text, Figs. 1-4, and the technique of controlling the frequency of the vibrating body is obvious.

Therefore, the technical feature common to all subject matters of claims 1-25 does not appear to disclose a contribution to prior art technique. So, this technical feature is not deemed to be a "special technical feature" described in the second sentence of PCT rule 13.2.

Therefore, the subject matters of "claims 1-2, 7-10 and 13-14", "claims 1 and 3-6", "claims 1 and 11-12", "claims 1, 15-17 and 19", "claims 1, 18 and 20", "claims 1 and 21-23", "claim 24" and "claim 25" do not satisfy the requirement of unity of invention.

4. Consequently, this opinion has been established in respect of the following parts of the international application:

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   ☒ the parts relating to claims Nos. 1-2, 7-10, 13-14

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/JP2005/001867

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	2, 7-10, 13-14	YES
	Claims	1	NO
Inventive step (IS)	Claims	7-10, 13-14	YES
	Claims	1-2	NO
Industrial applicability (IA)	Claims	1-2, 7-10, 13-14	YES
	Claims		NO

2. Citations and explanations:

Document 1: JP, 55-101800, A (Pioneer Electronic Corp.), 04 August, 1980 (04.08.80)

Document 2: JP, 10-47254, A (Yugen Kaisha Guppi), 17 February, 1998 (17.02.98)

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Document 4: CD-ROM of the specification and drawings annexed to the written application of Japanese Utility Model Application No. 48851/1992 (Laid-open No. 22582/1994) (Nakasa Co., Ltd.), 25 March, 1994 (25.03.94)

The subject matter of claim 1 does not appear to be novel or to involve an inventive step since this subject matter is disclosed in document 1 or 2 cited in the ISR.

Document 1 discloses a gas discharge device comprising a vibrating body (14) and discharge parts (11a, 12a) for discharging a gas as a pulsating flow by the vibrations of the vibrating body in such a manner that the sound waves produced when gas is discharged, cancel each other out.

Although document 1 does not specifically describe a control means for controlling the frequency of the vibrating body, there is the description "driving of the driver unit is always performed at ± 30% of the resonance frequency" in document 1 (page 2, upper-left column line 20 to upper-right column, line 1). Therefore, it is recognized that an indication of controlling the frequency of the vibrating body is described in document 1. Further, a technique of controlling the frequency of a vibrating body is obvious to a person skilled in the art.

Document 2 discloses a gas discharge device comprising vibrating bodies (16, 16) and discharge parts (15b, 15b) for discharging a gas as a pulsating flow by the vibrations of the vibrating body in such a manner that the sound waves produced when gas is discharged, cancel each other out. Although document 2 does not specifically describe a control means for controlling the frequency of the vibrating body, a technique of controlling the frequency of a vibrating body is obvious to a person skilled in the art.

The subject matter of claim 2 does not appear to involve an inventive step in view of documents 1-3 cited in the ISR.

It is well-known technique to control the amplitude of a vibrating body for discharging a gas as described in document 3 (paragraphs [0031]-[0032]). Therefore, a person skilled in the art could

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

have easily conceived of controlling the amplitude of the vibrating body of the gas discharge device described in documents 1 and 2.

The subject matters of claims 7 and 8 appear to be novel and to involve an inventive step because these matters are not described in any of the documents cited in the ISR. Particularly, a technique in which the frequency of the vibrating body is controlled below 100 Hz and the amplitude of the vibrating body is controlled between 1 and 3 mm if the area of the vibrating body is less than 70,000 mm^2 is not described or indicated in any of the documents.

The subject matters of claims 9 and 10 appear to be novel and to involve an inventive step because these matters are not described in any of the documents cited in the ISR. Especially, a technique in which the frequency of the vibrating body is controlled below 35 Hz and the amplitude of the vibrating body is controlled between 1 and 5 mm if the area of the vibrating body is less than 70,000 mm^2 is not described or indicated in any of the documents.

The subject matters of claims 13 and 14 appear to be novel and to involve an inventive step because these matters are not described in any of the documents cited in the ISR. Especially, a technique in which $A \times B \times C$ is between 100,000 and 10,000,000 mm^3/s wherein A is the frequency of the vibrating body (Hz), B is the amplitude of the vibrating body (mm) and C is the area of the vibrating body (mm^2) is not described or indicated in any of the documents.

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- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
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International application No.
PCT/JP2005/001867

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   a. type of material

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WRITTEN OPINION OF THE
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International application No.
PCT/JP2005/001867

Box No. IV **Lack of unity of invention**

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   ☒ not paid additional fees

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1. Statement

Novelty (N)	Claims	2, 7-10, 13-14	YES
	Claims	1	NO
Inventive step (IS)	Claims	7-10, 13-14	YES
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Industrial applicability (IA)	Claims	1-2, 7-10, 13-14	YES
	Claims		NO

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The subject matter of claim 2 does not appear to involve an inventive step in view of documents 1-3 cited in the ISR.

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The subject matters of claims 9 and 10 appear to be novel and to involve an inventive step because these matters are not described in any of the documents cited in the ISR. Especially, a technique in which the frequency of the vibrating body is controlled below 35 Hz and the amplitude of the vibrating body is controlled between 1 and 5 mm if the area of the vibrating body is less than 70,000 mm^2 is not described or indicated in any of the documents.

The subject matters of claims 13 and 14 appear to be novel and to involve an inventive step because these matters are not described in any of the documents cited in the ISR. Especially, a technique in which $A \times B \times C$ is between 100,000 and 10,000,000 mm^3/s wherein A is the frequency of the vibrating body (Hz), B is the amplitude of the vibrating body (mm) and C is the area of the vibrating body (mm^2) is not described or indicated in any of the documents.